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(54) Exhaust Silencers

(57) An exhaust silencer comprising a tubular casing (2), an end plate (1) that closes one end of the casing, and a damper plate (6) that is superimposed on the inner rear surface of the end plate, the end and damper plates being connected together and to the casing by their outer peripheral portions. Preferably, a common connection (3) connects the end and damper plates (1, 6′) together and connects them to the casing (2), said connection comprising a rolled connection in which the outer peripheral portions of the end plate and damper plate are rolled together with an adjacent end of the tubular casing. Preferably, a pipe (5) projects through the end plate (1), the end plate and damper plate being ring-shaped and having super-imposed inner peripheral portions that are formed into an axially outwardly projecting flange (4, 8) that abuts and is welded to said pipe.

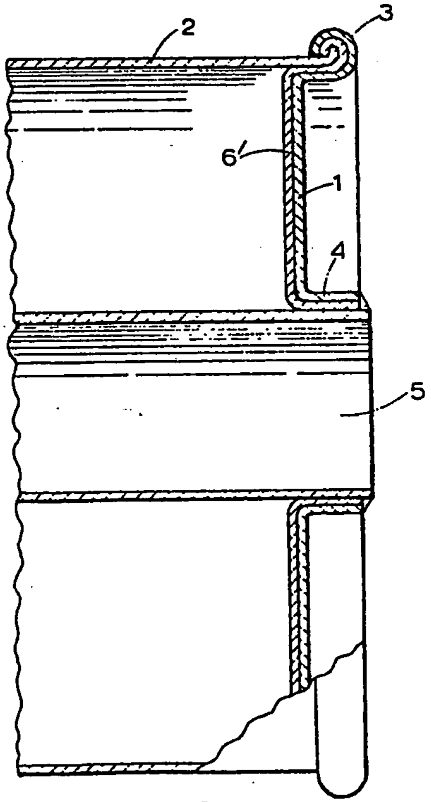

FIG.2.

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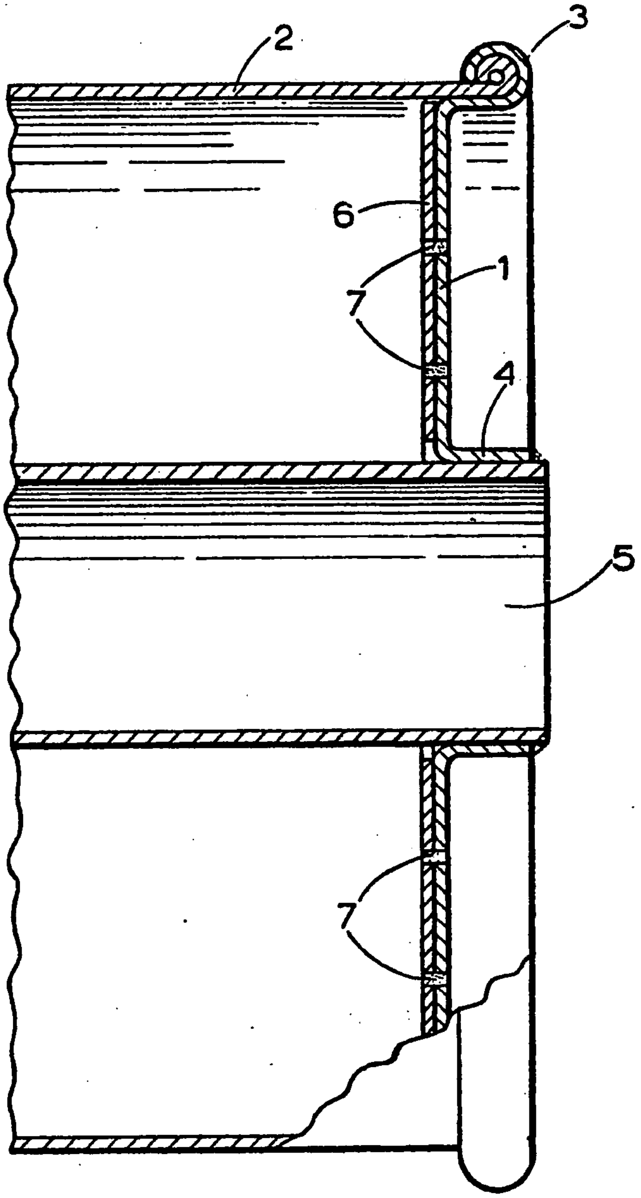

FIG.1.

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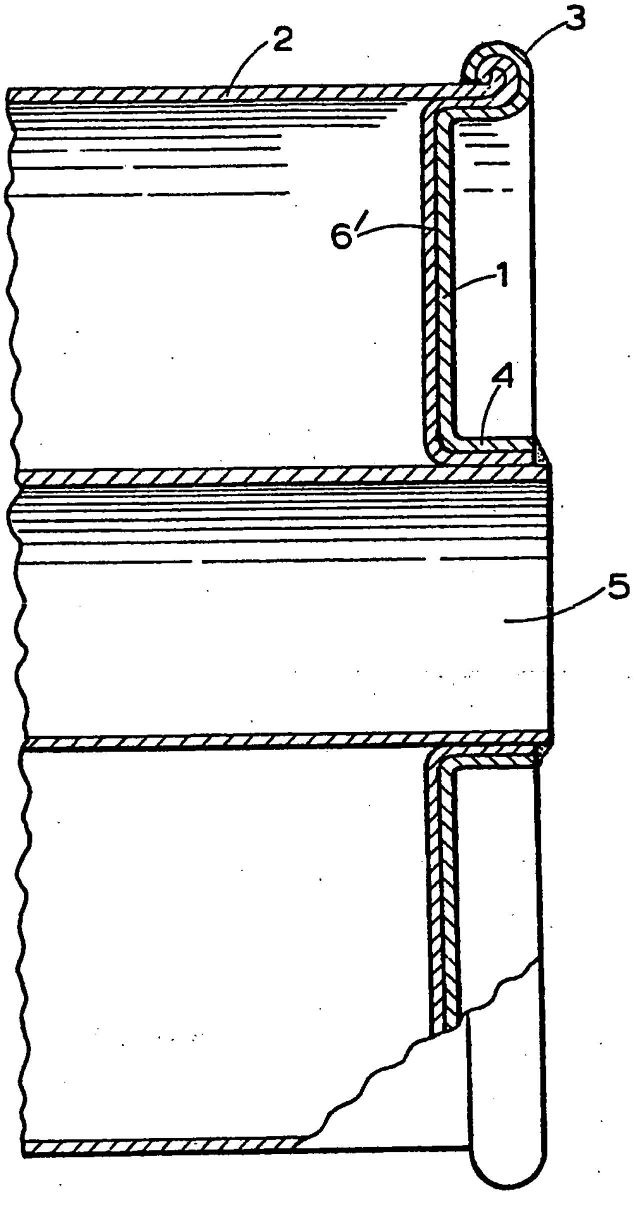

FIG.2.

SPECIFICATION
Exhaust Silencers

This invention relates to exhaust silencers.

It is known to suppress acoustical resonances in exhaust silencers by spot welding a damper plate to each of the end plates that close the ends of the tubular casing of the conventional silencer. The damper plates change the natural frequency of the end plates and thereby reduce or eliminate the unwanted noise.

According to the present invention, we propose to suppress unwanted acoustical resonances by providing end plates each comprising two superimposed sheets that are connected together and to the outer casing by their outer peripheral portions.

The two superimposed sheets are the equivalent of the end plate and damper plate of the known arrangement, and they are preferably connected together by their connection to the outer casing, the separate spot welds of the known arrangement thereby being eliminated and assembly of the silencer being simplified.

In an embodiment of the invention in which a pipe projects through an aperture in the end plate, the two sheets of the end plate are connected together by a common connection to the pipe.

The invention will now be described by way of example with reference to the accompanying drawings in which.

Figure 1 is a part section of the end plate of a known exhaust silencer, and

Figure 2 is a part section of the end plate of an exhaust silencer according to the invention.

The known exhaust silencer shown in Figure 1 has a ring-shaped end plate 1 that is connected at its outer periphery to a tubular casing 2 by a rolled connection 3, and is connected by an axially outwardly turned flange 4 at its inner periphery to a connection pipe 5 that passes through the centre of the end plate and is welded to the flange 4. A ring-shaped dpamer plate 6 is spot welded at a plurality of places 7 to the inner rear surface of the end plate 1 and serves to reduce or eliminate noise that would be caused by vibration of the end plate.

The exhaust silencer according to the invention shown in Figure 2, is generally similar to that of Figure 1 in that it comprises an outer casing 2, an inner connection pipe 5 and an end plate 1 that is connected to the casing by a rolled connection 3 and to the pipe 5 by an outwardly turned flange 4. However, the exhaust silencer according to the invention differs in the form of the damper plate 6′ incorporated therein. Instead of this being a smaller ring-shaped plate spot welded to the flat inner rear surface of the end plate, the damper plate 6′ comprises a plate of substantially the same size and shape as the end plate 1 which is superimposed on the inner rear surface of the end plate and is connected to the end plate and to the casing 2 at its outer periphery. The connection is the rolled connection 3 in which the outer peripheral edges of the end plate 1 and damper plate 6′ are rolled together with the edge of the casing 2.

The damper plate 6′ is also connected to the pipe 5 at its inner periphery by being formed with an axially outwardly turned flange 8 similar to the flange 4, both flanges 4 and 8 being welded to one another and to the pipe 5 at their outer edges. The weld may comprise a continuous gas weld or spot welds.

The end plate 1 and the damper plate 6′ may be composed of the same or different materials and may have the same or different thicknesses. Different materials may be used, for example mild steel, aluminium or stainless steel, in order to achieve required standards of strength and/or intend/extend corrosion resistance at a required cost.

Claims

1. An exhaust silencer comprising a tubular casing, an end plate that closes one end of the casing, and a damper plate that is superimposed on the inner rear surface of the end plate, the end and damper plates being connected together and to the casing by their outer peripheral portions.

2. A silencer as claimed in claim 1 in which a common connection connects the end and damper plates together and connects them to the casing.

3. A silencer as claimed in claim 2 in which said common connection comprises a rolled connection in which the outer peripheral portions of the end plate and damper plate are rolled together with an adjacent end of the tubular casing.

4. A silencer as claimed in any one of the preceding claims in which the pipe projects through the end plate, the end plate and damper plate being ring-shaped and having superimposed inner peripheral portions that are formed into an axially outwardly projecting flange that abuts and is welded to said pipe.

5. A silencer as claimed in claim 4 in which said superimposed inner peripheral portions of the end plate and damper plate are welded together and to said pipe at their outer edges.

6. A silencer as claimed in any one of the preceding claims in which the end plate and damper plate are composed of the same material.

7. A silencer as claimed in any one of claims 1 to 5 in which the end plate and damper plate are composed of different materials.

8. An exhaust silencer substantially as herein described with reference to Figure 3 of the accompanying drawings.

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